FACT SHEET
FOR THE DRAFT RENEWAL OF THE CONCRETE PRODUCTS
MANUFACTURING FACILITIES GENERAL PERMIT (NJ0108456)

This draft renewal of the Concrete Products Manufacturing Facilities General Permit (Concrete GP) regulates the discharge of stormwater from certain industrial areas and activities to surface and ground waters of the State, and discharges of concrete washout wastewater and/or concrete washout wastewater commingled with stormwater to surface waters only, from facilities engaged in the manufacture of concrete and concrete products. This draft renewal contains significant changes to the original Concrete GP. Specifically, this draft renewal Concrete GP requires the concrete industry to implement Performance Standards such as: drainage control measures; the recycling of waste materials; the elimination of certain discharges to ground water; and offers options for the implementation of treatment, effluent limitations and/or monitoring requirements dependent on the type of activities conducted on site and the type of discharges present at an individual facility. The draft renewal Concrete GP includes time frames for the implementation of the Performance Standards based on the effective date of the permit renewal, and does not require sampling of the discharges until after the implementation phase.

I. BACKGROUND

Under the Federal Water Pollution Control Act (Enacted by Public Law 92-500, October 18, 1972), as amended by the Clean Water Act of 1977 (PL 95-217, December 28, 1977) and the Water Quality Act of 1987 (PL 100-4, February 4, 1987), a facility with a stormwater discharge associated with industrial activity must obtain a National Pollutant Discharge Elimination System Permit (NPDES). The United States Environmental Protection Agency (USEPA) published final rules, dated November 16, 1990 for NPDES Permit Application Regulations for Stormwater Discharges, and as part of these rules, "*storm water discharges associated with industrial activity"* were defined as (xi) categories of facilities considered to be engaging in "industrial activity". Category (ii) of the definition includes facilities regulated which are involved in the manufacture of stone, clay and glass products, including concrete block and brick, other concrete products: precast and preformed concrete, and ready mixed concrete, including but not strictly limited to those classified under the SIC Codes 3271, 3272 and 3273, or equivalent North American Industrial Classification System (NAICS) Code, or from any facility the Department deems a primary manufacturer of concrete and/or concrete products.

The New Jersey Department of Environmental Protection (NJDEP or Department) is the issuing authority for NPDES permits in the State of New Jersey, and issues permits under the New Jersey Pollutant Discharge Elimination System (NJPDES). The New Jersey Administrative Code, specifically N.J.A.C. 7:14A-11.5 and N.J.A.C. 7:14A-1.2, define "*stormwater discharges associated with industrial activity*" for point source discharges to surface water. The NJPDES rules also regulate stormwater discharges from point and nonpoint sources at N.J.A.C. 7:14A-1 *et seq*. Industrial stormwater discharges to ground water are regulated pursuant to New Jersey's Water Pollution Control Act (N.J.S.A. 58:10A-1 *et seq*.), the NJPDES rules (N.J.A.C. 7:14A-7-8) and the Ground Water Quality Standards (N.J.A.C. 7:9-6).

II. TYPES OF DISCHARGES AUTHORIZED

The draft renewal Concrete GP may regulate new and existing industrial stormwater discharges to surface and/or ground waters from facilities engaging in the manufacture of concrete block or brick (SIC Code 3271 or NAICS equivalent), concrete products other than block and brick (SIC Code 3272 or NAICS equivalent), ready mixed concrete (SIC Code 3273 or NAICS equivalent), and from other facilities the Department deems a primary manufacturer of concrete and/or concrete products. Certain types of discharges are ineligible for authorization under this draft renewal Concrete GP and those types of discharges are listed in Part II, Section B.2 of the permit.

This draft renewal Concrete permit specifically regulates the discharge of stormwater from certain industrial activities and areas to surface and ground waters of the State, and discharges of concrete washout wastewater and/or concrete washout wastewater commingled with stormwater to surface water, only through permitted outfalls identified in the facilities Drainage Control Plan.

III. POLLUTANTS IN DISCHARGES FROM CONCRETE PRODUCTS MANUFACTURING

Concrete is produced by mixing cement with fine aggregate (sand), coarse aggregate (gravel or crushed stone), water, and various chemicals (admixtures) to control setting time and plasticity. Cement is produced using a source of calcium (usually limestone) a source of silicon (such as clay or sand), and small amounts of bauxite and iron ore. These materials are heated in a kiln, where two important reactions take place, the calcining of limestone, and the bonding of calcium oxide and silicates. After these reactions, the new materials are cooled into a solid pellet form, are ground into a fine powder and then gypsum is added to form the final product.

The production of concrete requires the storage of large quantities of raw materials. This usually occurs outdoors where the potential for exposure to precipitation is high and usually results in the quality of stormwater discharging from these facilities to be negatively impacted. The exception is cement, which cannot be exposed to water and is therefore stored indoors, but may be exposed during loading, unloading, and handling operations. The primary pollutants of concern in discharges from concrete production include Total Suspended Solids, pH, Chemical Oxygen Demand, Iron, and Oil and Grease.

The first issuance of the Concrete GP included a group monitoring option. The Concrete Industry formed a group in accordance with general permit conditions and performed monitoring over a 2 year period from 15 representative facilities for the parameters of Total Suspended Solids and pH, resulting in 240 separate data points. The Department has reviewed these monitoring results and has included them in forming the basis for the draft renewal permit conditions. The results are summarized below:

Group Monitoring Results

Facility No.	11/98-1/99		2/99-4/99		5/99-7/99		8/99-10/99		11/99-1/00		2/00-4/00		5/00-7/00		8/00-10/00	
	TSS	PH	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH
1	5	7.7	5	8.2	10	8.2	8	7.2	90	8.9	12	7.6	3	7.2	24	8.2
2	341	11.9	--	--	132	10.9	228	10.1	--	--	<1	7.3	103	9.4	83	8.1
3	2416	9.4	<1	4.9	6	5.0	6	5.0	<1	4.7	2	4.9	<1	4.6	2	5.7
4	353	11.4	174	11.6	--	--	123	10.9	140	8.5	158	12.6	79	11.8	64	12.3
5	4	8.1	36	6.9	14	7.1	46	10.1	14	6.8	--	--	14	7.0	6	7.9
6	21	6.2	20	6.3	3	6.0	3	7.3	37	6.8	<1	6.5	2	7.2	<1	7.2
7	335	10.8	85	9.1	4	7.6	2	7.1	66	7.3	<1	7.1	20	8.6	60	7.4
8	193	11.1	550	9.6	170	9.5	1	6.8	379	12.3	<1	6.6	8	7.5	<1	7.0
9	333	9.0	14	7.4	--	--	34	8.2	11	7.7	18	7.4	19	9.6	<1	6.9
10	15	9.6	2	7.9	26	7.7	<1	7.1	45	11.9	<1	8.9	62	11.9	<1	7.5
11	5	6.6	--	--	1	6.4	<1	7.1	<1	7.1	6	6.9	<1	6.7	<1	6.9
12	17	7.7	--	--	129	9.0	--	--	--	--	47	6.9	21	10.0	--	--
13	516	11.9	98	11.6	126	11.5	74	9.7	148	9.7	--	--	272	9.8	22	10.4
14	747	9.7	--	--	584	8.9	--	--	69	9.5	--	--	46	9.7	102	9.0
15	356	9.5	105	9.2	--	--	210	9.5	543	9.9	88	8.4	1320	10.8	2489	10.2
n=	15	15	11	11	12	12	13	13	13	13	12	12	15	15	14	14
Mean Value	377	9.4	99	8.4	100	8.2	57	8.2	119	9	28	8	131	9	204	8
Maximun	2416	11.9	550	11.6	584	11.5	228	10.9	543	12.3	158	12.6	1320	11.9	2489	12.3
Minimum	5	6.2	<1	4.9	1	5.0	<1	5.0	<1	4.7	<1	4.9	<1	4.6	<1	5.7

Note: TSS is in mg/L and pH is in Standard Units (su)

IV. SUMMARY OF BASIS FOR THE DRAFT PERMIT CONDITIONS

The renewal general permit conditions are intended to minimize environmental impact from industrial activities associated with the production of concrete and concrete products. This shall be accomplished through the establishment and implementation of Performance Standards for the industry. These performance standards focus on four basic concepts: drainage control; recycling; eliminating and minimizing discharges to groundwater; and ensuring discharge quality through treatment, the imposition of effluent limitations and/or monitoring. The Department believes that the inclusion of these performance standards will have far-reaching benefit, including: establishing clear objectives for the industry, maintaining consistency through defined compliance activities, and affording flexibility to permittees by allowing them to choose the appropriate method for handling their stormwater and/or process wastewater discharges.

This permit provides various engineered treatment options which correspond with monitoring of the stormwater discharge(s), or the control of stormwater quality through the implementation of BMPs corresponding with the imposition of effluent limitations. This general permit provides additional flexibility in the option of discharging concrete washout wastewater to surface water, solely or commingled with stormwater, suffice effluent limitations are met. The flexibility afforded in this general permit is atypical and is usually found only in individual permits. The Department is offering this progressive general permit as an incentive to the concrete industry, as a significant reduction in costs will result with authorization under this general permit, as opposed to individual permit fees or fees from multiple permits which would otherwise be required if discharging concrete washout wastewater.

The Department has included in this general permit, industry standards for controlling pollutants from leaving the site and preventing them entering surface or ground waters of the State. These industry standards are achieved by selecting from a variety of discharge, treatment and monitoring options and implementing Industry-Wide Minimum Requirements, which include:

- the development of a Drainage Control Plan, which includes diverting non-industrial stormwater (runoff from employee parking areas and roof drainage) from industrial stormwater; assurance that all regulated stormwater and wastewater discharges through permitted outfalls only so samples are consistently representative of the industrial activities occurring on site (this may require regrading or engineering of the site); and paving all industrial areas to minimize discharges of pollutants to groundwater;

- the development of a Recycling Program which shall optimize the recycling of all industrial materials, including waste materials generated during concrete production, water recycling through the use of admixtures to reduce wash water volumes and fresh water use, and the consideration of recovery/reclaimation systems to reduce and/or eliminate the discharge of concrete washout wastewater;

- the Preparation and Implementation of a Stormwater Pollution Prevention Plan, which includes a description of all Industry-Wide Minimum Requirements; the Discharge, Treatment and Monitoring Options selected; and any additional BMPs selected by the facility for implementation.

In addition to the Industry-Wide Minimum Requirements, facilities authorized under this general permit must select discharge, treatment, and monitoring options contained in the permit. The selected discharge, treatment, and/or monitoring option(s) are to be identified in the facility's Drainage Control Plan. Discharge, treatment, and monitoring options are dictated by a combination of factors including the facility's drainage patterns, type of discharge(s) (stormwater only, stormwater commingled with concrete washout wastewater, or concrete washout wastewater only). A facility may select one option or a combination of options (for more specific details on the options see Part IV, Section B of the general permit).

The Drainage Control Plan is a necessary tool for the permittee to analyze flow patterns of the discharge(s) occurring on site. During this process facilities will need to assess the quality of their discharges as an initial step in determining if a treatment option is preferable or whether stormwater quality could be controlled through selected BMPs. Drainage control is also required to ensure all samples are consistently representative of the industrial activities occurring on site and are taken pursuant to N.J.A.C. 7:14A-6.5(a).

The group monitoring data submitted to the Department indicates that the quality of stormwater discharged from the participating facilities, varied greatly. The maximum value for TSS reported was 2,489 mg/L, while the minimum value reported was <1 mg/L. pH values also fluctuated from a maximum value of 12.6 su to a minimum value of 4.6 su. The primary control of stormwater quality in the first rendition of the general permit was the requirement to implement various BMPs designed to eliminate or minimize (to the greatest extent practicable) exposure of source materials to stormwater. Monitoring results support the contention that the "remove and cover" philosophy of the BMPs implemented work in some, but not all situations. The data strongly indicates that at some facilities the BMPs had little effect on improving stormwater discharge quality. The lack of effectiveness of the BMPs may be a result of general

housekeeping, inspection and maintenance activities, but are more likely a result of physical constraints at the facility and inherent difficulties in handling industrial materials and the discharge of concrete washout wastewater. Based on these findings the Department believes stronger controls are necessary. Permittees will have the opportunity to evaluate whether the sole use of BMPs is adequate or whether treating the stormwater, or a combination of both, will be sufficient in meeting the conditions of the general permit.

Facilities that choose to implement BMPs (without providing treatment) will be subject to effluent limitations on the respective stormwater discharge as a measure of control and for protection for the receiving water quality. Facilities will be responsible for measuring the effectiveness of the implemented BMP(s) through monitoring, inspection, and maintenance activities to ensure an exceedance of the effluent limitation(s) does not occur for stormwater only discharge(s) as depicted in Part III of the general permit. Parameters required for sampling include pH, TSS, Oil and Grease, COD and Iron.

The effluent limitation proposed in this general permit for TSS of 100 mg/L, is based partly on group monitoring results, which indicated that 71 out of 120 samples taken for TSS were less than 100 mg/L, and 5 of 15 facilities monitored never exceeded 100 mg/L in the 8 quarterly monitored periods. In addition, the EPA effluent limitation guideline at 40 CFR Part 411.32 for the Cement Manufacturing Facility, Material Storage Runoff is 50 mg/L (best conventional pollutant control technology and best practicable control technology). While the EPA effluent limitation guideline is not applicable to the concrete industry, it does illustrate that technology is available to meet an effluent limitation of 100 mg/L TSS. The group monitoring data also indicates that for properly maintained facilities, 100 mg/L limit for TSS is attainable for facilities that only implemented BMPs, therefore the Department deems this proposed effluent limitation for TSS of 100 mg/L is justified.

Similarly, a pH range of 6-9 su was achieved by facilities that participated in the group monitoring, of which 55 out of 120 samples and 3 out of 15 facilities met the pH range during the 8 quarterly monitored periods. Also the EPA effluent limitation guideline at 40 CFR Part 411.32 for the Cement Manufacturing Facility for pH is 6-9 su. While meeting a pH limitation of 6-9 su may prove to be more difficult relying solely on BMPs, the Department is comfortable with the basis for inclusion of the limitation, as alkaline discharges are directly attributable to the concrete manufacturing process. Additionally, the inclusion of an Oil and Grease limitation of 15 mg/L is pursuant to N.J.A.C. 7:14A-12.8.

Facilities may otherwise choose to treat stormwater only discharges by installing a wet pond, designed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey or another engineered system for a design storm of 3.5" of rain, falling uniformly during a 24-hour period (2yr/24hr storm) with a retention of at least 36 hours. The Department accepts the performance standard that properly engineered wet ponds are capable of removing 80% TSS. The engineered treatment system shall be designed to meet the following effluent characterization: Total Suspended Solids (100 mg/L as a daily max.), pH (6-9 su), Oil and Grease (15 mg/L daily max.), Iron (1.0 mg/L daily max.), and Chemical Oxygen Demand (120 mg/L daily max.). Both of these options will require the installation of a chemical metering system designed to achieve a pH in the stormwater discharge between 6-9 su. Facilities that

implement either option will be required to monitor the stormwater only discharges in accordance with Part III of the permit.

Discharges of concrete washout wastewater or stormwater commingled with concrete washout wastewater discharges are of particular concern as they generally contain significant TSS loading and have a high pH. These discharges are, by regulation, a process wastewater discharge and not considered stormwater, however the Department is streamlining the NJPDES permitting process by regulating this discharge in the general permit. Concrete washout wastewater that is discharged to surface water solely, and/or commingled with stormwater, shall meet the effluent limitations for the following parameters: pH (6.0-9.0 standard units), Oil and
Grease (10 mg/L daily max), Total Suspended Solids (40 mg/L daily max), Iron (1.0 mg/L daily max) and Chemical Oxygen Demand (30 mg/L monthly average, 45 mg/L weekly max). The
following parameters are proposed for monitoring only: Flow (monthly average/daily max), Total Suspended Solids (monthly average) and Surfactants (monthly max).

Flow: The general permit does not include a numerical limitation for flow. Monitoring conditions are applied pursuant to N.J.A.C. 7:14A-13.13.

The USEPA, in their review of the concrete manufacturing industry, indicated the following parameters were pollutants of concern for concrete washing activities at these facilities:

Chemical Oxygen Demand (COD)
Total Suspended Solids (TSS)
pH
Oil & Grease

Chemical Oxygen Demand (COD): The concentration limitations are based on the most stringent effluent standards for the Atlantic Coastal Plain / Delaware River / Hackensack River / Passaic River / Wallkill River / Hudson River / Kill Van Kull / Arthur Kill River Basins at N.J.A.C. 7:14A-12.4. N.J.A.C. 7:14A-12.4(c) allows for the substitution of COD for BOD5, when COD is a more appropriate parameter to limit, by assuming that COD is normally found in wastewater at a 2:1 ratio to BOD5.

Total Suspended Solids (TSS): The concentration limitations are based on the NJSWQS for fresh and saline waters.

pH: The effluent limitations of 6.0 standard units (minimum) and 9.0 standard units (maximum) are deemed sufficient to protect the receiving water body.

Oil and Grease: The effluent limitations are based on N.J.A.C. 7:14A-12.8(c).

Surfactants: Surfactants are to be monitored in order to determine if their presence in the concrete washout wastewater is a pollutant of concern.

Monitoring frequencies and sample types are in accordance with N.J.A.C. 7:14A-14.

V. COMPLIANCE SCHEDULES

This draft permit will grant twenty-four (24) months from the effective date of the final permit for new and existing permittees to fully implement the proposed Industry-Wide Minimum Requirements including the implementation of the discharge, treatment and monitoring options.

The facility shall submit Attachment C (certifying the SPPP has been developed or revised incorporating all additional requirements of this permit) within six (6) months from the effective date of the final permit along with the Drainage Control Plan.

The Implementation and Inspection Certification (Attachment D) shall be submitted to the Department within twenty-four (24) months from the effective date of the final permit, certifying the SPPP is fully implemented and that the facility is in compliance with all permit conditions.

Newly constructed facilities shall submit a Drainage Control Plan, the SPPP Preparation Certification Attachment C and the SPPP Implementation and Inspection Certification Attachment D, with the request for authorization (RFA). Industry-Wide Minimum Requirements shall be implemented prior to the commencement of industrial activities occurring on site. Discharge sampling shall begin within twenty-five days after the effective date of permit authorization.

Monitoring for new and existing permittees shall begin twenty-four months from the effective date of the final permit.

VI. DISCHARGES TO GROUND WATER

The concrete general permit regulates the discharge of stormwater and concrete washout wastewater to ground waters of the state. To prevent the discharge of pollutants to groundwater from concrete operations, facilities are required to minimize the discharge of pollutants by paving all areas of industrial activity. In addition, any basin that receives concrete washout wastewater or concrete washout wastewater commingled with stormwater must be lined in accordance with permit conditions. Basins that receive stormwater only discharges do not have to be lined.

VII. RESIDUALS CONDITIONS

Generally, operations that generate sludge resulting from treatment of the stormwater will be subject to the monitoring and reporting requirements contained in Part III. In accordance with the Sludge Quality Assurance Regulations (SQAR, N.J.A.C. 7:14C), the frequency of monitoring is based upon the amount of sludge generated. Consequently, the frequency of monitoring found in Part III may be reduced for individual authorizations. Also in accordance with the SQAR, the parameters to be monitored in Part III may change in individual authorizations pursuant to N.J.A.C. 7:14C-1.9(b).

All treatment works with a discharge regulated under N.J.A.C. 7:14A must have permits that implement applicable technical standards for residual management. Generally, the permit issued to the treatment works generating the residual will include applicable residual quality

monitoring as well as other general conditions required by N.J.A.C. 7:14A-6. In addition, the permit may include conditions related to any aspect of residual management developed on a case-by-case basis where the Department determines that such conditions are necessary to protect public health and the environment.

The permit may also include conditions establishing requirements for treatment works that send residuals to other facilities for final use or disposal. Thus, ALL residual preparers (that is, generators as well as persons who manage the residual) are required to submit basic information concerning their residual use and disposal practices. This basic information is submitted by compliance with the Sludge Quality Assurance Regulations (N.J.A.C. 7:14C).

The documents listed below have been used to establish the residual conditions of this draft permit:

a. United States Environmental Protection Agency "Standards for the use or disposal of sewage sludge" (40 CFR Part 503),
b. "New Jersey Pollutant Discharge Elimination System" (N.J.A.C. 7:14A),
c. Technical Manual for Residuals Management, May 1998,
d. USEPA Part 503 Implementation Guidance, EPA 833-R-95-001, October 1995. This document is a compilation of federal requirements, management practices and EPA recommended permit conditions for sewage sludge use and management practices,
e. USEPA A Plain English Guide to the EPA Part 503 Biosolids Rule, EPA/832/R-93/003, September 1994,
f. New Jersey "Statewide Sludge Management Plan", November 1987 and
g. New Jersey "Sludge Quality Assurance Regulations" (SQAR), N.J.A.C. 7:14C.

VIII. REQUESTED VARIANCES OR ALTERNATIVE STANDARDS

There are no variances available or alternative standards contained in this permit.

IX. ADDITIONAL INFORMATION

Additional information may be obtained from Vicki Margulies within the Bureau of Nonpoint Pollution Control at 609-633-7021, Monday through Thursday between the hours of 9:00 AM and 5:00 PM.

CONTENTS OF THE ADMINISTRATIVE RECORD

The following items were used to establish the basis for this Draft Renewal Permit:

1. The existing NJPDES Industry Specific General Permit NJ0108456, effective August 1, 1995, expired on July 31, 2000.
2. The Draft Permit for NJ0108456 (effective August 1, 1995).
3. EPA Office of Compliance Sector Notebook Project, *Profile of the Stone, Clay, Glass and Concrete Industry*, dated September 1995. *NPI
4. Appendix A – Summary of Responses to Public Comments on the November 19, 1993 Draft Multi Sector General Permit. *NPI
4. 33 U.S.C. 1251 et seq., Federal Water Pollution Control Act. *NPI
5. N.J.S.A. 58:10A-1 et seq., New Jersey Water Pollution Control Act. *NPI
6. 40 CFR Part 122, National Pollutant Discharge Elimination System. *NPI
8. N.J.A.C. 7:14A-1 et seq., New Jersey Pollutant Discharge Elimination System Regulations. *NPI
9. N.J.A.C. 7:9B-1 et seq., New Jersey Surface Water Quality Standards. *NPI
10. 40 CFR Part 131, Federal Water Quality Standards. *NPI
11. "Field Sampling Procedures Manual", published by the NJDEP. *NPI
12. "Discharge Monitoring Report (DMR) Instructional Manual", published by the NJDEP. *NPI
13. Delaware River Basin Commission Water Quality Regulations. *NPI
14. USEPA Vehicle Washing BMPs, Region VI, February 16, 1996. *NPI
15. South Carolina Department of Health and Environmental Control NPDES General Permit for Vehicle Wash Water Dischargers, effective April 1, 1996. *NPI
16. Recommended Pollution Prevention Practices for the Mobile Power Wash Industry, Greater Kansas City Metropolitan Area, September 1997. *NPI
17. Oregon Department of Environmental Quality Draft NPDES General Permit for Wash Wastewater Discharges to Surface Water. *NPI
18. Nationwide Urban Runoff Program, USEPA and consultants, 1983. *NPI
19. Group Sampling Data submitted by the National Concrete Manufacturer's Association, Group # 1224, 1993. *NPI
20. Various industry technical reports. *NPI (available upon request)
21. Various existing relevant NJPDES permittees. *NPI (available upon request)

*NPI: Denotes officially part of the Administrative Record, but not necessarily a physical part thereof.